HELPING TO FIND AN ALTERNATIVE TO INJECTABLE DRUGS

Protagonist Therapeutics Inc is a biotechnology company originating from The University of Queensland, discovering and developing orally-stable peptide drugs that act against known drug targets and diseases, giving patients a potential alternative to injectable-only biologic drugs.

For biotechnology company Protagonist Therapeutics, overcoming the need to deliver peptide therapeutics by needle and syringe has been at the core of its research for over 15 years. Since its inception at The University of Queensland’s Institute of Molecular Biosciences (IMB), Protagonist has focussed its expertise on developing oral drugs for known drug targets and diseases which currently require treatments to be injected.

PEPTIDES EXPLAINED

Like proteins, peptides are naturally occurring biological molecules, found in all living organisms. They play a key role in all manner of biological activity.

Peptides are a chain of amino acids similar to a protein but shorter (approximately 50 or fewer amino acids). The biological function of a peptide is dependent on the types of amino acids involved in the chain and their sequence, as well as the specific shape of the peptide.

PEPTIDE THERAPEUTICS - PROS AND CONS

Peptide-based drugs have a number of significant benefits, including the fact that they have a high potency at a low dose. They are also very selective, which means they tend to only bind to their target receptor, resulting in fewer adverse side effects in patients.

The downside is that peptides also tend to have a very short therapeutic life. They require frequent administration to the patient as they are rapidly metabolised and have low oral bioavailability, which means only a small amount of the orally-administered dose reaches the bloodstream after passing through the stomach. Because of their small size, peptides absorbed into the blood are rapidly metabolised by the kidneys and are cleared from the body through the urine.

BREAKTHROUGH INNOVATION

Led by Associate Professor Mark Smythe, researchers at The University of Queensland’s Institute for Molecular Bioscience have been working to address these issues and to overcome the limitations of peptide drugs. They have successfully developed a technology platform for the discovery and optimisation of novel disulfide-rich peptides, where the disulphide bonds enhance peptide stability. The technology suite includes a purpose-built computational design environment, with the ability to prepare millions of molecules via phage libraries, and classical small molecule medicinal chemistry type analoging and structure-activity relationships development.
By building a stable oral peptide that provides superior potency, safety, convenience and affordability, Protagonist hopes to offer patients a long sought-after alternative to injectable drugs.

PIPELINE BUILDING
Protagonist’s orally stable peptides represent a major breakthrough. The company’s pipeline of drugs in development have a focus on orally administered peptides for inflammatory bowel diseases (IBD), irritable bowel syndrome (IBS), and other gastro-intestinal disorders. The lead program is currently in clinical development for IBD (Ulcerative Colitis) and is preceded by peptide therapeutics for IBD (Crohn’s Disease) and iron overload disorders, such as beta-thalassemia and hereditary hemochromatosis. The company envisions building a steady pipeline of novel drugs reaching clinical proof-of-concept in the coming years.

COMMERCIAL PARTNERSHIPS
Protagonist’s technology platform has been validated through its research collaborations and commercial partnerships with leaders in peptide therapeutics, Massachusetts-based Ironwood Pharmaceuticals and Denmark-based Zealand Pharma A/S. Protagonist brings its proprietary disulfide-rich peptide (DRP) technology platform to both partnerships, applying it to undisclosed but different drug targets for Ironwood and Zealand, with the aim to provide them both with novel peptides for potential development in therapeutic areas with significant unmet medical needs.

In both deals, Protagonist receives research funding and will be entitled to receive additional payments, depending on the successful achievement of pre-defined discovery and development milestones, as well as royalties on the sales of each product.

BUSINESS GROWTH
Since it was founded in 2001, Protagonist has raised a total of $88 million in private funding, including a $40 million Series C financing lead by Canaan Partners in July, 2015. Additional investors included Adage Capital Management, RA Capital Management and Foresite Capital. All of the company’s existing investors, including Johnson & Johnson Innovation - JJDC, Lilly Ventures, Pharmstandard International, S.A, and Starfish Ventures also joined in the financing.

Following the fundraising, Protagonist initiated a Phase I clinical trial in 2016 for its lead compound - a novel, orally stable peptide therapeutic for inflammatory bowel diseases.

With headquarters established in Menlo Park, California, Protagonist Therapeutics Inc. listed on the NASDAQ stock market in 2016, raising $90 million in its initial public offering of 7.5 million shares. The company was recognised at the 2016 AusBiotech and Johnson & Johnson Innovation Industry Excellence Awards as ‘Australian Company of the Year’.

Partnership with UniQuest
UniQuest is one of Australia’s leading research commercialisation companies. It specialises in global technology transfer and facilitates access for all business sectors to the world class expertise, intellectual property and facilities at The University of Queensland, Australia.

Our Track Record
UniQuest enters into over 400 research contracts per year – many with repeat clients from industry. UniQuest has created over 70 companies from its intellectual property portfolio, and since 2000 UniQuest and its start ups have raised more than $600 million to take university technologies to market. UQ technologies licensed by UniQuest – including UQ’s cervical cancer vaccine technology and image correction technology in magnetic resonance imaging machines – have resulted in combined net sales of final products in the order of $13 billion from 2007 to 2015.

If you want to know more about this commercialisation story or other offerings from UniQuest’s Health portfolio, contact:

Dr Craig Belcher
Senior Director – Commercial Engagement, Health
Mobile +61 (0)407 637 853
c.belcher@uniquest.com.au or visit www.uniquest.com.au

The Protagonist Journey So Far

- Protagonist Therapeutics Pty Ltd was established in 2001 by founder and inventor Associate Professor Mark Smythe as a start up company out of The University of Queensland’s Institute of Molecular Bioscience.
- Lead programs in pre-clinical development focus on treatments for inflammatory bowel disease (IBD), irritable bowel syndrome (IBS) and other gastro-intestinal disorders.
- As well as its own proprietary drug pipeline in development, Protagonist has secured commercial partnerships including collaborative research with Massachusetts-based Ironwood Pharmaceuticals and Denmark-based Zealand Pharma A/S, both industry leaders in peptide therapeutics.
- In 2016, the company listed on the NASDAQ, raising $90 million in its initial public offering of 7.5 million shares.